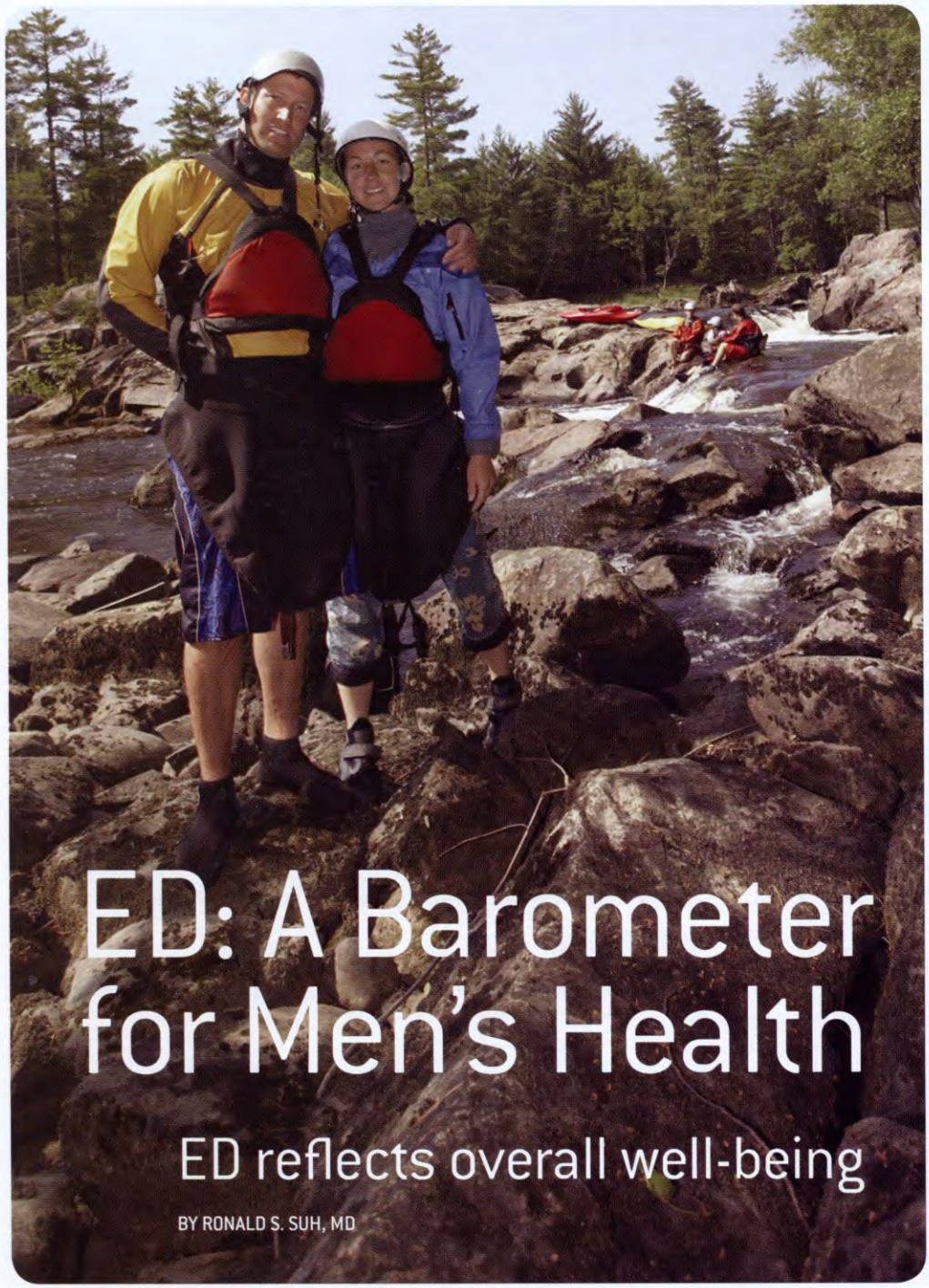

ED: A Barometer for Men's Health

ED reflects overall well-being

BY RONALD S. SUH, MD

Erectile dysfunction (ED) affects an estimated 30 million men in the United States, including more than half of all men between 40 and 70 years of age. Although aggressive, consumer marketing by pharmaceutical companies has increased public and physician awareness of ED, estimates continue to predict that less than one in six men with the condition are ultimately diagnosed and treated.

Risk factors for developing ED include aging, cardiovascular disease, hypertension, diabetes, depression, and benign prostatic hypertrophy (BPH). New evidence demonstrating the predominant role of endothelial dysfunction in the pathophysiology of ED highlights the importance of identifying ED as an early marker for cardiovascular disease and atherosclerosis.

Additionally, early intervention and risk modification, including behavioral and dietary changes, may not only reduce the progression and severity of ED but also result in improvements in overall cardiovascular health. Therefore, it is important to include questions about ED development in routine health-maintenance evaluations for men.

Medication

Initial ED management is preferably through the use of oral phosphodiesterase-5 (PDE-5) inhibitors. With the availability of these Food and Drug Administration (FDA)-approved medications, older, off-label, and historical therapies such as yohimbine, trazadone, and apomorphine should not be utilized.

PDE-5 inhibitors potentiate vascular smooth muscle relaxation within the penis, increasing penile blood flow. They are associated with several class-specific side effects, typically flushing, headache, rhinitis, and dyspepsia. Additionally, tadalafil (Cialis®) is associated with back pain, and sildenafil (Viagra®) is tied to visual disturbances.

Nonarteritic anterior ischemic optic neuropathy (NAION) and its association with the use of PDE-5 inhibitors are controversial but rare. Concomitant use of PDE-5 inhibitors and nitrates is contraindicated and should be avoided in patients who rely on nitrates in the management of stable angina.

Recent changes in FDA labeling have made the use of PDE-5 inhibitors alongside alpha-blocker therapy for treatment of BPH or hypertension less confusing, with the recommendation calling for concomitant use only in those patients on a stable regimen of an alpha-blocker without vasodilatory side effects.

Hormonal Abnormalities

Common reasons for initial failure in patients trialing PDE-5 inhibitors are food or drug interactions, timing and frequency of dosing, lack of adequate sexual stimulation, concomitant alcohol use, and hormonal abnormalities. Patients should be instructed to take the medication on an empty stomach without food or alcohol. Sexual stimulation should occur within the "window of opportunity," ideally beginning 30 minutes after administration of vardenafil (Levitra®) and Cialis and one hour after ingesting Viagra.

The role of hormonal abnormalities in ED is somewhat confusing and misleading. Although important for normal libido, testosterone plays no role in the physiology of an erection. Studies have demonstrated the achievement of adequate erections in hypogonadal men with

visual sexual stimuli. Therefore, testosterone replacement alone in patients with testosterone deficiency and ED is typically not adequate.

However, recent studies highlighted the improved efficacy of PDE-5 inhibitors when administered to patients following testosterone replacement in instances of concurrent androgen deficiency. Therefore, it is often beneficial to measure serum testosterone levels in patients who do not initially respond to PDE-5 inhibitor administration, especially in those patients with diminished libido or other signs of androgen deficiency.

Nonsurgical Invasive Medical Therapies

Patients who do not respond to oral therapies may be interested in pursuing either nonsurgical invasive medical therapy, noninvasive mechanical-device assistance with a vacuum erection device (VED), or surgical intervention. Referral to a urologist will allow the patient to discuss and differentiate between the advantages, disadvantages, and suitability of each.

Nonsurgical invasive medical therapies essentially rely on the principle of providing vasoactive agents, such as prostaglandins, directly to the corporal smooth muscle of the penis. These include intraurethral alprostadil suppositories or intracorporal injection with a small caliber needle. Efficacy varies but is generally good. Unlike oral therapies, no sexual stimulus is required for effect.

These therapies, however, are sometimes associated with a higher incidence of adverse side effects, such as priapism and pain. Some patients are reluctant to self-administer the medication. Use of intracorporal injection is acceptable in patients on antiplatelet agents, such as aspirin or clopidogrel (Plavix®) but should be avoided in those on warfarin or heparin therapy.

Mechanical-Device Assistance

Mechanical-device assistance with a VED is an effective, noninvasive treatment for ED. These devices are available without a prescription, but patients should take caution and avoid use of devices without a vacuum-pressure limiter, as this can result in dangerous levels of negative pressure.

Essentially, a VED provides an active, manual means of pooling blood within the sinusoids of the penile corpora. Exit of blood is prevented with the application of a constrictive ring at the base of the penis. Although safe and effective when used properly, patients may find its use cumbersome, as it does require a degree of manual dexterity. Use of these devices is associated with a high dropout rate.

Surgical Options

For those patients who do not respond to oral therapy and either fail or are unsatisfied with other nonsurgical treatments, surgical implantation of a penile prosthesis is a safe and effective option in the management of ED. Penile prosthesis implantation essentially involves replacement of the corporal sinusoidal tissue with either malleable or inflatable prosthetic cylinders within each corpora cavernosa.

Advancements in design and materials have improved the reliability of penile prostheses, and impregnation of the devices with an antibiotic coating has lowered the infection rate associated with these devices. All currently available devices are compatible with MRI use as well.

Surgical implantation of a penile prosthesis is performed through a single scrotal incision, typically under general anesthesia, although regional anesthesia is used when necessary. Blood loss is minimal, and the procedure takes less than one hour. Patients are kept overnight for intravenous antibiotic administration and observation. Postoperative pain typically requires a few days of an oral narcotic. Lifting and sexual activity are restricted for six weeks to allow proper healing.

Penile Prostheses

There are two types of penile prostheses available for implantation — malleable and inflatable. The malleable penile prosthesis is composed of two semirigid cylinders implanted within the corporal bodies. An erect penis for intercourse is achieved by proper positioning of the cylinders, and therefore, there is no true flaccid state.

This may be cumbersome and impractical for many patients, and generally, a malleable penile prosthesis is only recommended for those patients who lack the dexterity to manage the second type of device — an inflatable penile prosthesis.

The inflatable penile prosthesis consists of two cylinders, which are manually cycled through a rigid and flaccid state via a pump located within the scrotum. Saline or an iso-osmotic radiographic contrast solution is stored within a reservoir, most commonly located within the retropubic space, for filling of the cylinders. The inflatable penile prosthesis results in a natural-looking, rigid, flaccid state. It is associated with patient satisfaction rates as high as 95% and partner satisfaction rates as high as 98%.

Common complications associated with penile prosthesis implantation include infection, erosion, and mechanical failure. With the use of new, antibiotic-impregnated implants and proper perioperative techniques, infection rates are generally 2% or lower in experienced hands. Mechanical failure with these newer devices is approximately 5% for every five years following implantation. These complications are typically treatable with reimplantation of a replacement device.

Patients are cautioned that there is usually some degree of penile shortening. Additionally, following implantation, other forms of ED therapy are generally not effective in cases of penile prosthesis removal due to destruction of the sinusoidal tissue during surgery and fibrosis.

Treatment Within Reach

ED is a common condition affecting many of our patients. There are a wide variety of effective treatment options available. Often, patients are reluctant to initiate discussion of this condition. However, erectile function is also an early barometer of cardiovascular health; therefore, recognition of ED can result in benefits beyond improving a patient's sexual quality of life.

Ronald S. Suh, MD, is originally from Warren, Michigan, but spent much of his adolescence in Central Indiana. He is a graduate of Indiana University in Bloomington, where he was a Metz Scholar and earned his Bachelor of Science degree in chemistry. He earned his medical degree from the Indiana University School of Medicine in Indianapolis and completed both his internship in surgery and his residency in urology at the University of Michigan Medical Center in Ann Arbor. Dr. Suh is a member of the American Medical Association and the American Urological Association. His areas of special interest include impotence, male reproduction, urologic oncology, and general urology.